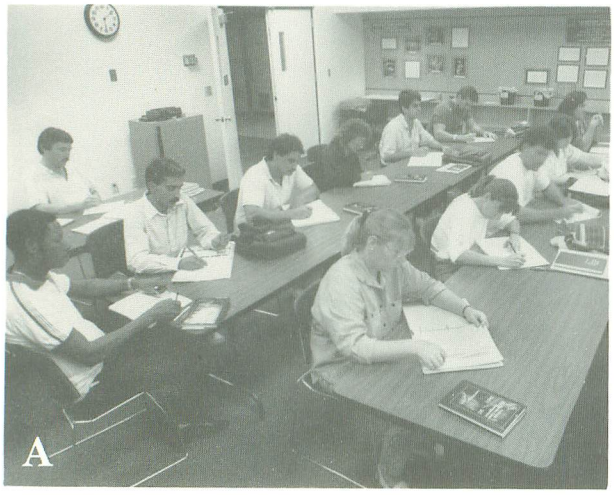


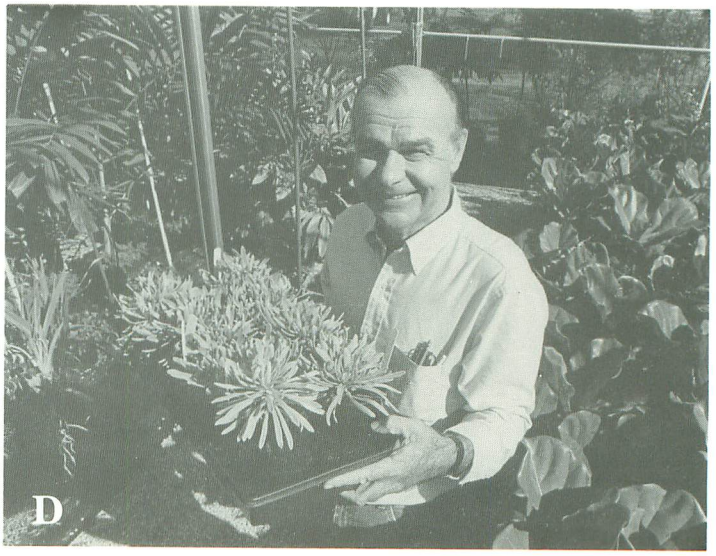
THE FORT LAUDERDALE RESEARCH AND EDUCATION CENTER
Institute of Food and Agriculture
University of Florida

Many students wanting to study horticulture are placebound and unable to relocate to the center campus of the University of Forida at Gainesville due to job and other commitments. Some have earned A.A. and A.S. degrees in horticulture, or a bachelor's degree in another field of study.

The University of Florida, Institute of Food and Agriculture (IFAS), has established a resident instruction program in ornamental horticulture, landscape practices and nursery management at Ft. Lauderdale to satisfy the needs of these career oriented students. Classes toward the B.S. degree are taught days, evenings and Saturdays to accommodate these students.

The training program is proving highly successful, having grown to over 70 students with the teaching of 16 different courses. For more information, please refer to the paper in this proceedings titled "Resident Instruction in Horticulture for Placebound Students" by Stephen Verkade and George Fitzpatrick, or phone the Center Director's office at 305-475-8990, or send a card to 3205 S.W. College Avenue, Ft. Lauderdale, FL 33314-7799.

Above, is (A) a class in 'Retail Florist and Garden Center Management' taught by Dr. Stephen Verkade and (B) a field class in landscape practices taught by Dr. George Fitzpatrick. Below, at (C) student Bonnie Coy is conducting a senior research project and (D) student Richard Weidman is studying the many greenhouse ornamentals.



PROCEEDINGS

OF THE

102ND ANNUAL MEETING

of the

FLORIDA STATE

HORTICULTURAL SOCIETY

Library of Congress Catalogue No. 9-1702**

held at

Tampa, Florida

October 31-November 2, 1989

**This Library of Congress number is on-going, having been assigned to these Proceedings in 1909.

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Proc. Fla. State Hort. Soc. 102: 1989.

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Proceedings of the FLORIDA STATE Horticultural Society 1989

Volume CII Printed May 1990

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AWARDS OF THE SOCIETY

Presidential Gold Medal Award

Derek G. Burch

Award granted to Derek G. Burch, Horticulture Masterworks, Fort Lauderdale, for having contributed most to Florida horticulture through work published in the Proceedings of the Florida State Horticultural Society over the preceding six-year period in the Garden and Landscape Section.

Awards for Outstanding Papers

Awards for outstanding papers in Volume 102 of the Proceedings of the Florida State Horticultural Society presented at the annual meeting of the Society (November 1, 1989) by President W. H. Krome.

Citrus Section

J. D. Whitney, M. Salyani, D. B. Churchill, J. O. Whiteside, J. L. Knapp and R. C. Littell, "Ground Speed and Spray Volume of Airblast Sprayers Affect Copper Deposition and Greasy Spot Control."

Garden and Landscape Section

David E. Wedge, "Reintroduction of Flowering Trees to South Florida."

Handling and Processing Section

W. C. Wilson and T. A. Obreza, "Methods for Reducing Acidity in Citrus Fruit."

Krome Memorial Section

W. B. Sherman, P. M. Lyrene, N. F. Childers, F. G. Gmitter and P. C. Andersen, "Low-Chill Peach and Nectarine Cultivars for Trial in Florida."

Ornamental Section

Brent K. Harbaugh, G. J. Wilfret and A. J. Overman, "Tissue Cultured Stock History and Hot Water Treatment Affect Caladium Tuber Production on Sandy Soils."

Vegetable Section

J. W. Scott, G. C. Somodi and J. B. Jones, "Bacterial Spot Resistance is not Associated with Bacterial Wilt Resistance in Tomato."

Presidents Industry Award

T. A. Obreza, "Water Table Behavior Under Multi-Row Citrus Beds ."

Council Memorial Tomato Research Award

D. J. Pitts, G. A. Clark, J. Alvarez, P. H. Everett and J. M. Grimm, "A Comparison of Micro to Subsurface Irrigation of Tomatoes."

Graduate Student Award

B. L. Topp and W. B. Sherman, "Low-Chill Peach and Nectarine Evaluation in Australia."

Honorary Members

Dr. Julia F. Morton, University of Miami, Coral Gables, Presented by Dr. William Grierson

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Since 1892, one of the major roles of the Society has been providing, through its Proceedings, a medium for disseminating new and needed information among Florida horticulturists. Because Florida horticulture is often so different from that of the rest of the country, the Proceedings provide the only workable channel for such information. In 1968, the Presidential Gold Medal Award was instituted to honor authors notable for continued and useful contributions to these Proceedings. The gold medal winners have been:

Presidential Gold Medal Awards

R. C. J. Koo	W. Grierson	C. A. Conover
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J. R. Orsenigo	T. W. Young	J. O. Whiteside
W. E. Waters	James W. Strobel	C. R. Barmore
J. F. Morton	W. S. Castle	J. F. Price
S. J. Locascio	C. W. Campbell	L. A. Risse
C. A. Conover	R. M. Craig	A. G. Smajstrla
J. H. Bruemmer	V. L. Guzman	W. B. Sherman

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1971	O. R. Minton
1972	R. A. Dennison
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1975	Leon Miller
1976	John W. Sites
1977	J. B. Pratt
1978	R. R. Reed
1979	J. F. Morton
1980	C. Wayne Hawkins
1981	W. Grierson
1982	Roger Young
1983	Charles A. Conover
1984	Carl W. Campbell
1985	Fred Bistline
1986	Al H. Krezdorn
1987	Richard F. Mathews
1988	T. T. Hatton
1989	W. H. Krome

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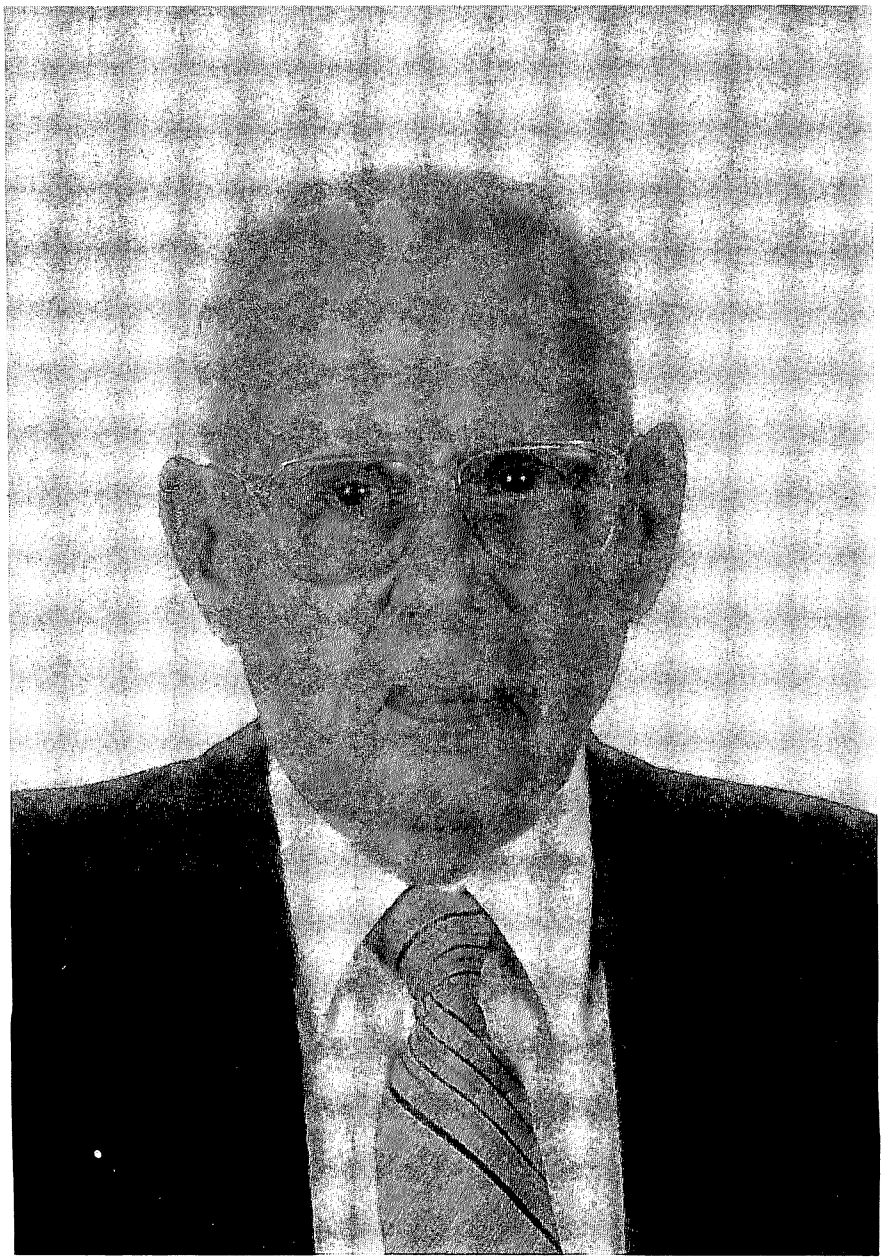
*Date year award made.

AWARD OF HONORARY MEMBERSHIP

Dr. Julia F. Morton

Dr. Julia F. Morton is Research Professor of Biology and Director of the Morton Collectanea of the University of Miami. She was co-founder and co-developer of the Collectanea in New York City 1933-48; Assistant Director, at the University of Miami 1949-1957; Director, 1957 to date. The Collectanea is an internationally consulted research and information center devoted to economic botany. She received the degree of Doctor of Science, Florida State University, 1971; was chosen as the first "Distinguished Economic Botanist" by Society of London in 1974 and has authored over 100 scientific papers and 10 books on botanical and horticultural subjects and contributed to others. Dr. Morton has served on a panel of the National Academy of Sciences Board of Science and Technology for International Development in the preparation of 4 handbooks on economic crops and aided work on others. She is Past-President of the Florida State Horticultural Society; lectures to University of Miami and other classes on economic plants, ornamental plants, toxic plants, native flora and the environment; has made a survival training survey (Hawaii, Philippines, Thiland, South Vietnam) for U. S. Department of Defense and submitted the report on survival-related Flora and Fauna of the Mekong, 1968. From 1965 through 1977 she conducted field studies in the Caribbean and southern U. S. for the National Institutes of Health. She has made a special study of the cashew in Venezuela, Columbia, and a 28,000-tree plantation in Pacalpa, Peru. It is fitting that Julia F. Morton be elected an Honorary Member of the Florida State Horticultural Society.



WILLIAM H. KROME

Tampa

PRESIDENT OF THE SOCIETY—1989

PRESIDENTIAL ADDRESS

WILLIAM H. KROME
Horticulturist
Post Office Box 596
Homestead, Florida 33090

Fellow Society Members and Distinguished Guests: Welcome to the 102nd annual meeting of the Florida State Horticultural Society. The papers and workshops of each of our six sections address our interests and problems at the highest level. I'm sure you will enjoy whichever section you choose to attend.

This Society was founded by growers and nurserymen, and they wrote the papers. They had to if there were going to be papers. The U.S.D.A. had no research station in Florida and IFAS came later. So they exchanged observations and worked together to secure the regulations and the research facilities that they needed. Today the quality of the papers by professional scientists is such that non-scientists are frequently embarrassed to contribute their observations even though this kind of contribution is as important in its way as are research papers. Nevertheless the bond between industry and the research agencies is strong, and this Society will always be a forum for the needs and findings of both elements. If we do this properly we will continue to grow as the Florida horticultural industry grows.

But the nature of our problems is changing in a profound manner. True, we still have problems of production and handling, and will continue to have them as long as we are in the business of growing fruit and vegetables. In addition, however, the problems caused by pollution of air and water, and of pesticide residues, have grown rapidly. Part of this is actual but part is in public perception. I have friends who love me dearly but are saddened because I use copper and benlate on my avocados and mangos. I suspect many of you know such people.

This is no great news. The threats of global warming and degradation of the environment have been trumpeted at us by press and television for some time. Most growers are intelligent and responsible. The last thing we want is to poison our customers or to pollute their, and our, drinking water. If any of our practices endanger the consumers or degrade the environment we want to know it and take appropriate measures to stop it. But as you know, this is not as simple as it might seem. The risk must be quantified as well as identified. If 16 parts per million of a substance on a fruit or vegetable will make you sick if you eat a pound of it every day, is 16 parts per billion dangerous if you eat six ounces of it twice a week? To what extent do our fertilizer and spray practices pollute the aquifer?

In many instances neither we nor the public know the answers to these questions. We need good answers, but there should be some room for common sense in our approach to these problems. IFAS is working on it. Meanwhile we must hope that the restrictions imposed by governmental agencies such as EPA will be adequate and wise and that there will be a minimum of sensationalism in the manner in which such matters are presented to the public. Educating the public on such a complicated subject is a tremendous job but I would suggest that proper instruction at the grade school level would be a good start: teaching children at an early age what is wholesome to eat and substances besides nicotine and cocaine should be avoided.

Somebody besides consumer groups should interact with government in these matters. The members of this Society constitute by far the greatest reservoir of responsible knowledge and ability for this purpose. But as a Society we have yet to become involved. Let us consider some formal arrangement to help both our elected representatives and their bureaucratic agencies cope with environmental and pesticide problems.

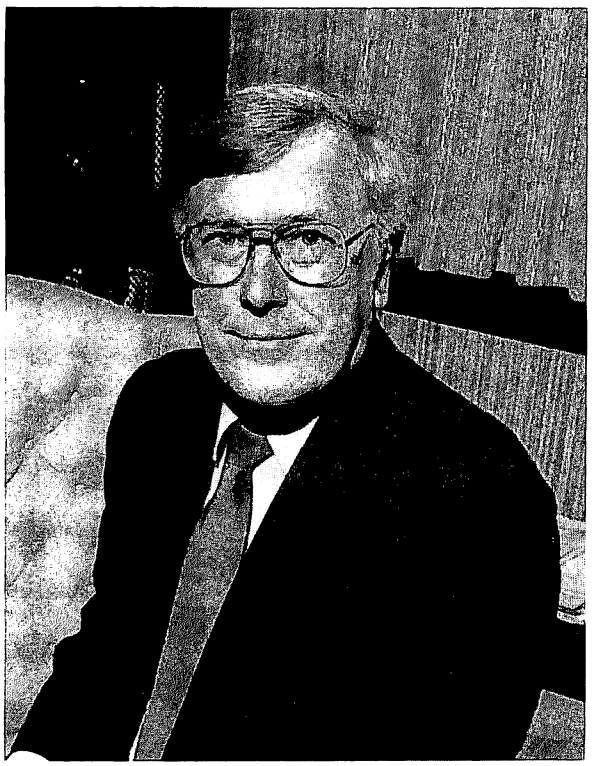
The Executive Committee has authorized the formation of a committee composed of experts in both industry and research to respond to requests for information by governing agencies. We visualize this group as suggesting the persons and methods which would best give the governing agency the information it needs. We will go about this in a careful manner and we expect it will be a valuable resource tool.

Please don't misunderstand me. I'm not advocating any sort of political activity. But legislators and agencies, State and Federal, need and want dependable information on matters on which they have to make decisions. They frequently ask University and research personnel for this kind of information. I have served on one or two workshops called to make recommendations *for government* use, and many of you have done the same. How does a legislator or a commissioner find whom to ask? He contacts someone in the University system or the Florida Fruit and Vegetable Association or Citrus Mutual. I think those people would be very glad to be able to address their requests to a committee of this Society formed for that purpose.

Let's not forget, we are more than a forum for papers. We are a dynamic part of Florida horticulture. It will be in the best tradition of our service to the industry and to the State for us to take an active role in this matter.

PRINCIPAL ADDRESS

Partnership for Addressing Challenges Facing Florida Horticulture



G. L. ZACHARIAH
Vice President for Agricultural Affairs
The University of Florida
Gainesville, Florida 32611

Nowhere can we find greater opportunity for collaboration between Scientists and industry than that provided by the Florida State Horticultural Society. You provide a forum for divergent opinions and we value the many and varied contributions of this society to the horticultural industries of *Florida.*

You represent the largest segment of Florida's farm output. You collectively produced 80 percent of Florida's farm gate income last year. Nationally, you ranked second only to California, and you helped the state remain eighth largest in the nation in value of farm sales.

You are a part of an overall industry that has posted significant gains in the past several years, gains brought about by improved production technologies and astute market positioning. We in IFAS believe that we have been a partner in your production and marketing successes.

Together in the last five years, we have celebrated three important centennials: the IFAS Centennial, the Florida State Horticultural Society Centennial, and the Centennial of the Agricultural Experiment Stations. These observances were important to us because they allowed us to reflect on the past and gain some insight into the road we have traveled.

Our past achievements, however, pale in comparison with the challenges of the future. We shall need all the wisdom we can glean from our past, linked with the most creative and imaginative minds we can muster today, if we are to suceed tomorrow.

As we face the final decade of this century, we are increasingly aware of major challenges and opportunities: ensuring global competitiveness; providing continued safe, abundant, high quality nutritious food for all our people; and safeguarding and enhancing our natural environment. Some would say that these challenges are not all complementary, that competitiveness and environmental enhancement are mutually exclusive. I believe we successfully can meet these challenges. We successfully can compete in a world market. We can maintain a safe, abundant and nutritious food supply. We can maintain and enhance the quality of our natural resources.

In fact, given the pressures at work in today's society, success demands that we not only produce low cost, safe and wholesome food, but that we do in a way that does not harm our environment. Competitiveness depends on profitability *and* natural resource sensitivity, just as it always has. Today's producer is just as dependent on an abundance of high quality natural resources as were our forebears. The keys, I believe, are our ability to develop, apply and manage science and technology and to effectively transfer our discoveries and management systems to the private sector.

I submit to you that we are well on our way toward meeting the challenges of the future. You have at your disposal the basic tools for dealing with profitability and natural resource enhancement. Those tools include IFAS teaching, research, and extension programs, which are based on Florida's needs for successfully meeting the challenges of the future.

IFAS has demonstrated time and time again that we are committed to the application of the land grant model as an effective resource for the entire state. Our commitment to you is to continue to improve undergraduate and graduate education to insure not only a steady and adequate supply of managers and innovators who can get the job done for industry, but also researchers and educators to continue the revolution in science.

I am pleased to report to you that this fall, our overall enrollment in IFAS degree programs continues the upswing started last year and is underscored by a 10 percent increase in undergraduate students. These numbers do not include nearly 80 students enrolled in our Southeast Florida ornamental horticulture degree program in Ft. Lauderdale or in course work being taught in some of other research centers such as Lake Alfred. We have every hope that the declining enrollment trend experienced during previous years has been reversed.

Changing life styles and consumption patterns, an increasing elderly population, and mounting concern over any level of chemicals in our food supply, even though exceedingly low, require the increased attention of IFAS programs in food science and human nutrition. The relationship between diet and human health, food processing and quality, and environmental toxicology are areas of emphasis. The IFAS pesticide research laboratory and the

center for environmental and human toxicology will continue to measure levels of chemicals in food and to research appropriate thresholds as a means of assuring producers and consumers that our food products are safe and wholesome.

I should add here that our ability to measure things in parts per trillion may mean there are no longer any absolutes, but rather matters of degree. The ability of advancing technology to identify extremely minute quantities of substances that are perhaps dangerous in larger quantities but harmless or even beneficial in smaller amounts may reinforce the wisdom of reasonable trade-offs. In reality, the goal of zero risk may be elusive and unrealistic because it may be unattainable.

Florida's continued competitive position in the global marketplace must be maintained and enhanced through an expansion of programs in marketing and trade. Alternative commodities, new product development, postharvest handling, demand elasticities, new market development based on the needs and demands of other parts of the world, and uniform application of trade practices to ensure a level playing field for the United States are all critical to our continued success in global competitiveness.

Furthermore, we can also take advantage of developments in other countries by adapting successful products and practices to our own markets.

One of the areas of greatest payoff for Florida is the area of biological pest control. Biological pest control uses plants, insects, bacteria, and micro-organisms as a method of controlling pest populations below economically important thresholds. As you know, we have had a great deal of success in controlling black fly, scales, and several other types of pests and diseases with their highly selective natural enemies.

Today we are faced with a critical need to develop replacements for a whole family of fungicides which make vegetable production in Florida possible. As the clock continues to tick, we are faced with a critical need for control of such pests as sweetpotato white fly, gemini viruses transmitted by white fly on tomatoes, citrus blight and tristeza, and a host of other economically significant pest and diseases that attack Florida crops. In some cases, IFAS will find solutions through foreign exploration since many of these pests and diseases are not native to Florida and the United States. In other cases, we will utilize new tools such as biotechnology to genetically engineer effective nonchemical controls.

Biotechnology is also a powerful tool for the development of new generations of plants able to withstand stress such as pests and diseases, infertile soils, temperature extremes, drought, flooding and salinity. The power of biotechnology is easily demonstrated when one considers that IFAS has developed over 300 new plant varieties specifically for Florida. More than 150 of these varieties have been developed since 1980, including plants that produce their own insect defense mechanisms.

One must be careful, however, not to underestimate the value of conventional science in the development of new plant varieties. While painstakingly slow and often inexact when compared to biotechniques, conventional breeding techniques offer generations of basic knowledge about germ plasm. The knowledge of conventional plant breeding, when paired with the speed and selectivity of biotechnology forms a powerful tool for the rapid development of desired characteristics in new varieties of plants.

As a case in point, Florida seedless grape development was dependent upon the use of a Pierce's *disease resistant* germ plasm. Using conventional techniques, plant breeders needed years to develop the first seedless grape variety that was resistant to Pierce's disease. Using biotechnology, and the knowledge gained through years of conventional work, plant breeders developed in less than a year over 250 new breeding lines for seedless grapes in Florida. The point is, both conventional science and biotechnology were important for success in this area.

As mentioned previously, environmental compatibility is another aspect of competitiveness, regardless of the type of industry. Technology and systems developed and extended by IFAS must be environmentally compatible. Genetically engineered organisms to cleanup soil and water systems, compost plant and solid waste feasibility studies, varieties of plants that require far less water and fertilizer than those that exist today, studies on the relationship between production agriculture and water quality, wildlife habitats and natural range ecosystems, and techniques for biomass energy conversion are examples of IFAS programs designed to be natural resource-sensitive and economically feasible for Florida.

Closely related to the compatibility issue is regulation. Despite our ongoing search for biological control techniques, the food and agricultural industry of Florida will continue to need some chemicals to be able to compete in domestic and world markets. But to employ chemicals without regard to their effect on our environment and how these chemicals move through soil and water is not realistic.

On the other hand, we as a state require a climate of reasoning before regulation. To demand regulation without regard to the economic impact of that regulation on the business enterprise is unrealistic. And to regulate without seeking solutions to problems through research and education is shortsighted. Industry, regulatory agencies and IFAS must work together to develop appropriate technology, properly evaluate it, and employ it to not only ease environmental pressures but to also enable people to continue to earn a living.

Regulatory agencies are making use of IFAS research data and IFAS-developed technology to work cooperatively with industry for practical answers and effective solutions. The key, we believe, is to conduct research, gather unbiased data, and objectively evaluate those data for the development of sound policy guidelines for natural resource assessment and enhancement.

The rapidly changing needs of Florida's food and agricultural industry dictate not only IFAS research directions and thrust for the future but also new ways of transferring information and technology and helping in its adoption. Improved methods of assessing state needs, innovative systems for information management, and rapid systems for technology transfer are as critical as research priorities to the future success of Florida's food and agricultural industry.

An example of an innovative system for research information storage and dissemination is the Florida Agricultural Information Retrieval System, or FAIRS. By the end of this year, FAIRS will be accessible to every extension

office in Florida. FAIRS is a computerized data base with production and pest control information on avocados, citrus, cotton, snap beans, limes, mangoes, peanuts, soybeans, strawberries, tomatoes, turfgrass, and wheat.

FAIRS also contains information on pesticide application and irrigation systems design. FAIRS operates as a stand-alone, desktop computer system, and offers extension agents more then 20,000 screens of needed information in the form of text and images. Through FAIRS, IFAS extension faculty are linked by computer to the most recent research supplied by more than 175 experts from IFAS and the U.S. Department of Agriculture. To extension faculty FAIRS delivers the services of a variety of specialists—engineers, nematologists, entomologists, plant pathologists, horticulturists, agronomists, nutritionists—on an as-needed basis to answer questions and help solve problems.

If all of these computer file or data bases were printed on paper, you would have the equivalent of a series of encyclopedias on agricultural production. The increased memory of computers makes it possible to store FAIRS on most desk top IBM-PC compatible computers. FAIRS is installed on a computer's internal hard disk and eliminates the need for a telephone hook-up to use the system.

Direct grower delivery of FAIRS has been recently tested in Highlands and Polk counties. More tests are planned to determine the feasibility of providing direct grower access to the FAIRS system. FAIRS is also available, or soon will be, at strategically located IFAS research and education centers throughout Florida.

FAIRS is destined to become even more sophisticated with the development of problem-solving expert systems that mimic the way an expert offers advice. These systems will ask questions about a grower's operation and analyze the answers to suggest ideas for trimming labor and production costs. Other systems will give growers tailor-made recommendations for dealing with specific problems such as harmful insects on beans or citrus diseases. Linking FAIRS with desk top publishing capabilities gives an alternative to the traditional form of printed extension publications and will significantly speed up the flow of timely information and technology to IFAS clientele throughout Florida, on an as-needed, case-by-case basis.

I have briefly outlined programs designed to assist Florida in its efforts to remain competitive in world economy and compatible with increasing pressures from urban areas. Recent IFAS program reviews in 1986, 1988, and 1989 have underscored the importance of IFAS programs to the continued success of the food and agricultural industry, to the enhancement of our natural resources, and to the overall health and vitality of Florida's economy.

If IFAS is to truly fulfill our potential for service to Florida, however, the state must make a major commitment by continuing the investment on behalf of all its citizens in research and education programs. To put this in perspective, corporate America invests a minimum of three percent of its economic worth for its research and development. With an industry of over $5.8 billion per year of farm gate income, the IFAS research budget could be in the $170 million range, about three times its present level.

Furthermore, levels of expenditures for IFAS non-salary program support has remained relatively flat since 1980-81. During the 1989 Legislative session, we did receive a small increase in some types of support funds. Let me emphasize that despite inadequate levels of state assistance, we are still striving to continue to improve programs and program delivery systems.

The state and federal assistance IFAS has received in the past has been supplemented by private gifts from individuals, foundations, and corporations. In addition, industry has supported specific research efforts and educational programs with targeted grants to IFAS departments, research centers, and specific extension programs. Many of these gifts and grants come from individuals, organizations and business represented by the membership of the Florida State Horticultural Society. We thank you for this support. This support not only provides the means for developing solutions to specific problems, but also enables legislators to justify increased public appropriations on the basis of gifts and grants and demonstrates the importance of a given program to the private sector.

Finally, let me conclude by reiterating that we are continuing to improve IFAS programs as much as we possibly can. We want to constantly stay attuned to your needs. I remind you that my office door is always open, and I am always available to you either personally or by telephone, as are members of our IFAS faculty and administration.

I appreciate the opportunity to bring you these remarks today and wish you continued sucess in your endeavors, particularly this 102nd annual meeting of the Florida State Horticultural Society.

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